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C622 C602  
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(54) Turbocharging assembly with controllable air-charge compressors for an internal-combustion engine

(57) Air-charge compressors (16, 17) are in permanent driving connection with an exhaust-driven turbine (15) which cannot be cut out during operating periods of the internal-combustion engine. The control of the operating condition (no-load delivery or delivery operation) of each air-charge compressor (16, 17) is effected by a change-over device (20) controlling the pressure connection. To improve the efficiency of the turbocharging assembly (12) the power absorption of whichever air-charge compressor (16, 17) has just been adjusted to no-load delivery is minimised by controlling the fluid mass throughput of (for example) "recirculated" air or turbine exhaust gas (eg. Figs. 3, 4) through that compressor. Devices (29, 30) of the compressors (16, 17) enable the direction of air flow to the rotors to be controlled to impart one of counter-swirl, no-swirl or co-swirl to the air entering the rotor.

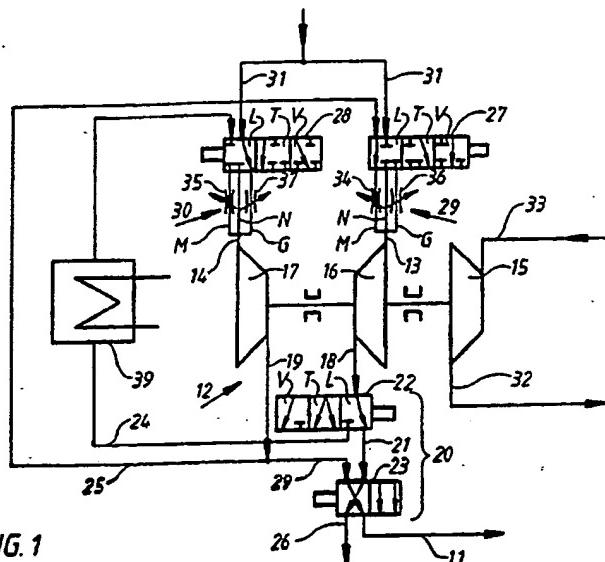


FIG. 1

GB 2 244 312 A

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Information on patent family members

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## TURBOCHARGING ASSEMBLY WITH CONTROLLABLE AIR-CHARGER COMPRESSORS FOR AN INTERNAL-COMBUSTION ENGINE

- 5       The invention relates to a turbocharging assembly with controllable air-charge compressors for an internal-combustion engine, the air-charge compressors being in driving connection with an exhaust-driven turbine which cannot be cut out during 10 operating periods of the internal-combustion engine, the operating condition (no-load delivery or delivery operation) of each air-charge compressor being determined by a change-over device controlling the pressure connection.
- 15      When a forced-induction internal-combustion engine is operating under partial-load and at lower than optimum speed of rotation it is advantageous to adjust the turbocharging assembly to the reduced 20 output of exhaust-gas energy and to optimise the air-charge supply.
- 25      DE-C-3 932 721 discloses a turbocharging assembly of the type in question, in which the adjustment of the air-charge supply to the operating condition of the internal-combustion engine is effected by cutting in and out one of the two air-charge compressors operating in parallel.
- 30      Although the air-charge compressor to be cut out but entrained is connected to the common air-intake duct it is, however, adjusted to so-called no-load delivery by opening a venting outlet at its pressure connection. At the speed of rotation of the 35 rotor of the turbocharging assembly predetermined by the exhaust-driven turbine and the other air-charge

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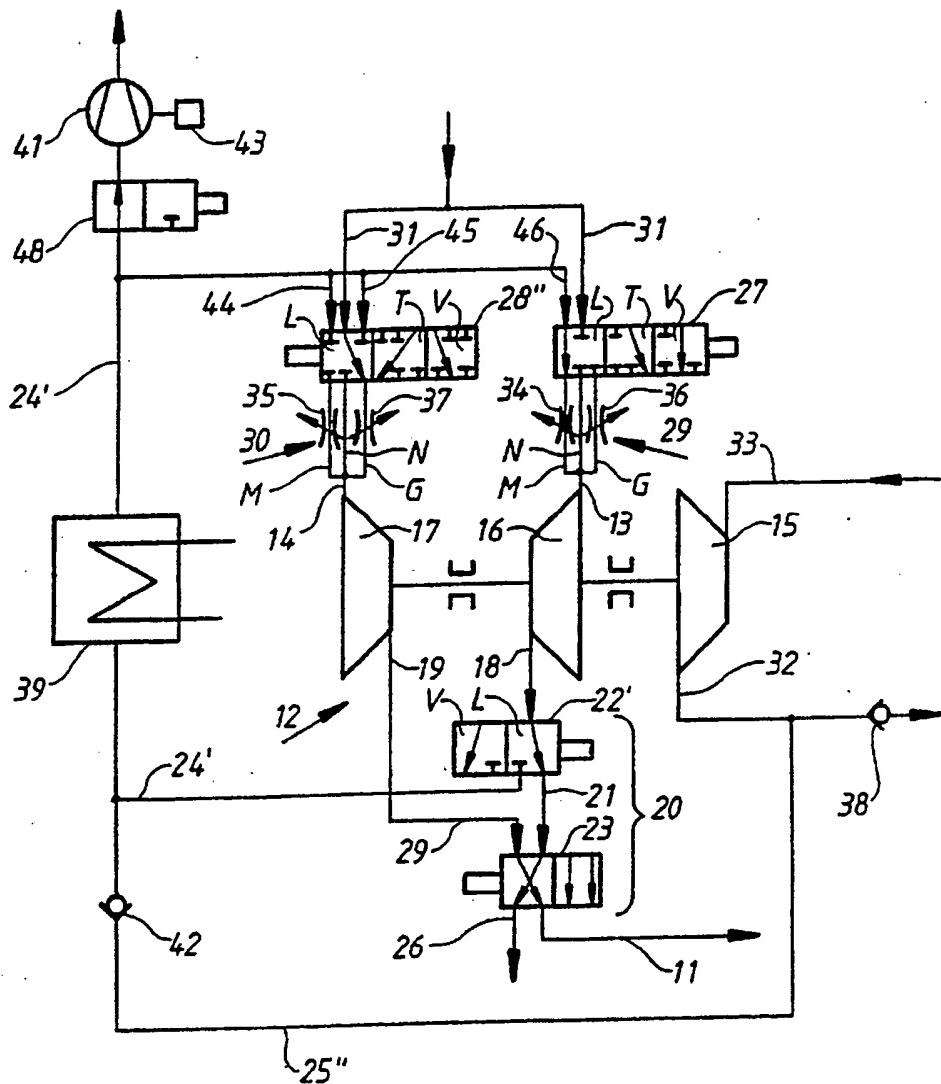
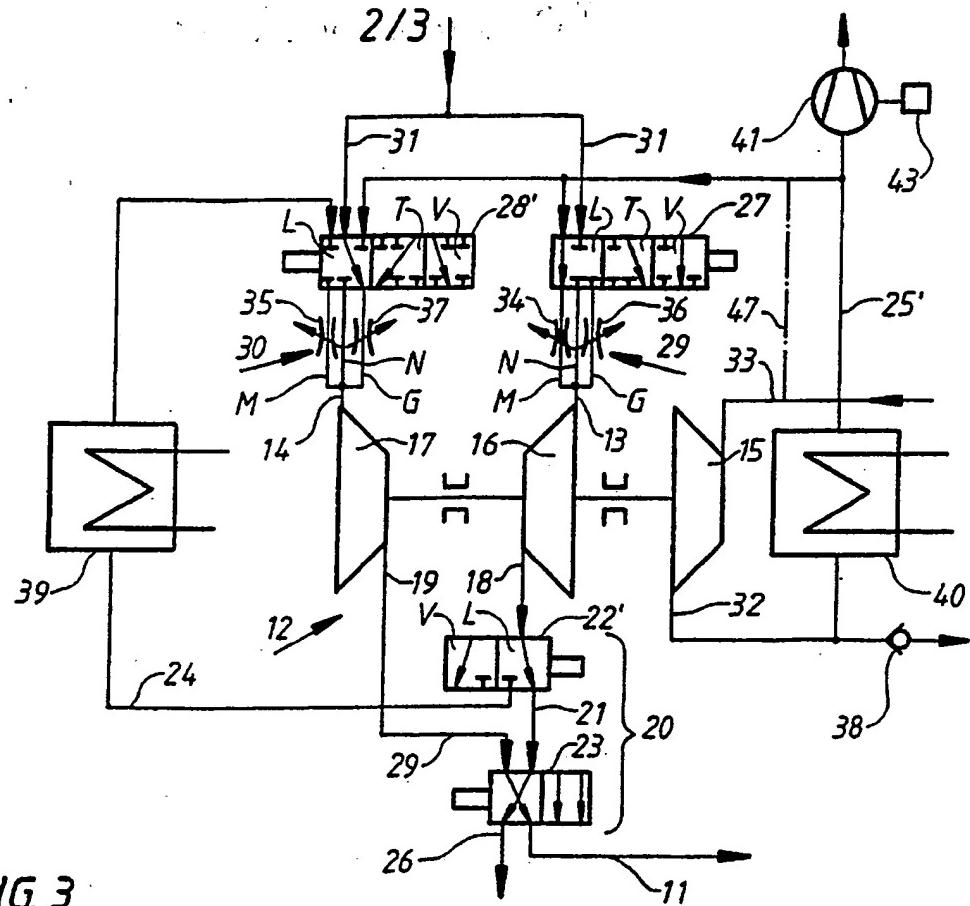


FIG. 4

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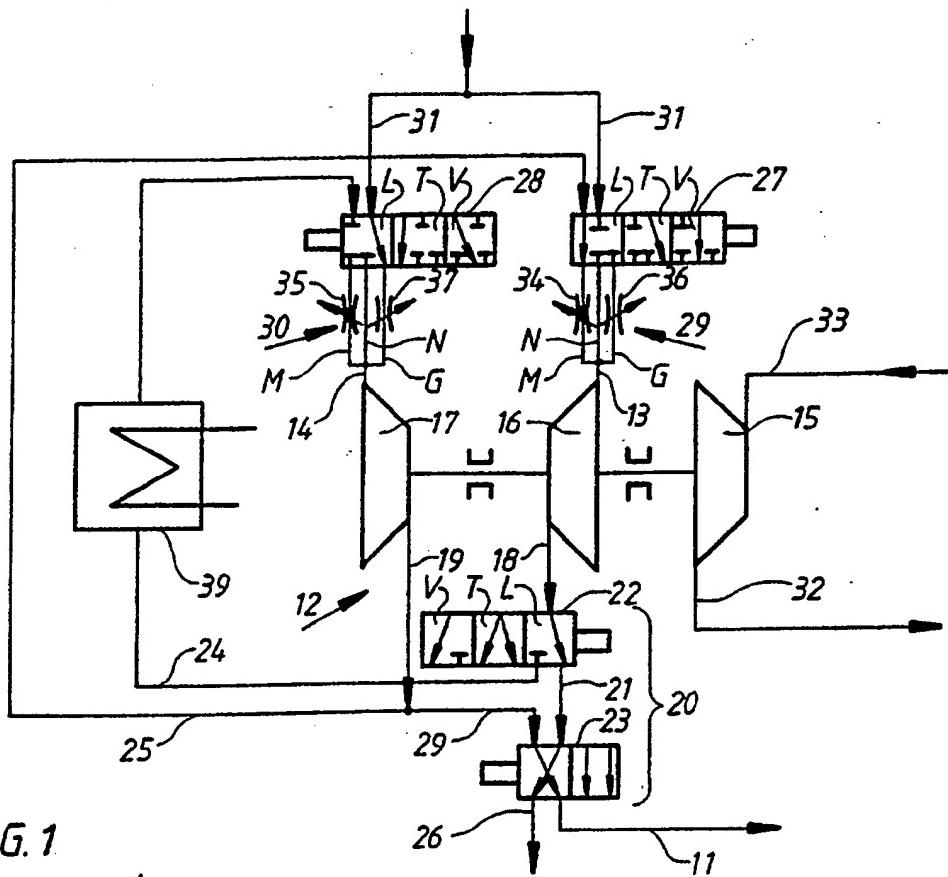


FIG. 1

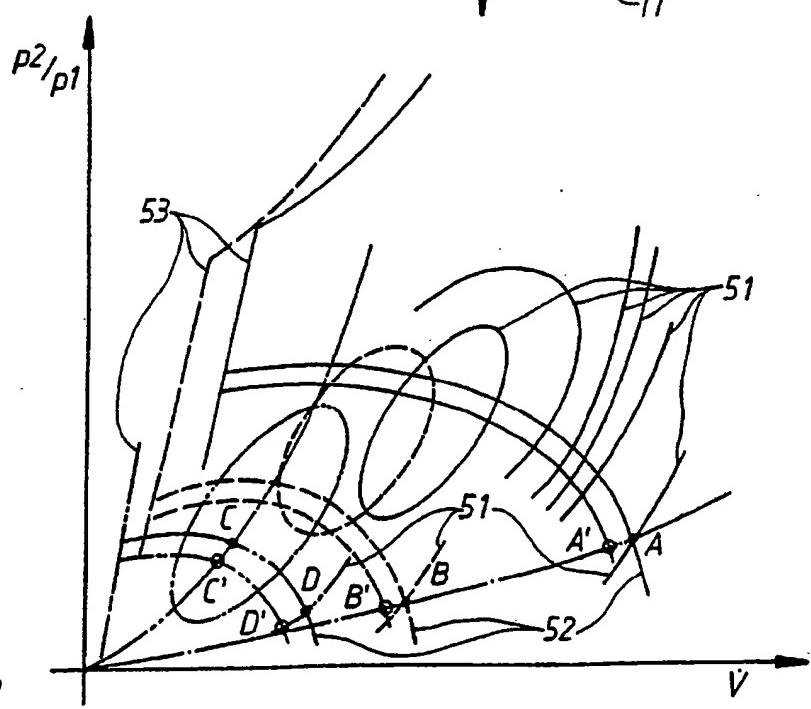


FIG. 2